TABLE OF CONTENTS

VOLUME 76, 1993

January [1]

Journal

Corrosion of Silicon-Based Ceramics in Combustion Environments ☆ Nathan S. Jacobson 3

Deformation Behavior of an Al_2O_3–$Y_3Al_5O_{12}$ Eutectic Composite in Comparison with Sapphire and YAG ☆ Triplicane A. Parthasarathy, Tai-Il Mah, and Lawrence E. Matson 29

Viscous Glass Crack Bridging Forces in a Sintered Glassy Alumina at Elevated Temperatures ☆ Karl Jakus, John E. Ritter, and Roland H. Schwillinski 33

Model for the Formation of Silicon Carbide from the Pyrolysis of Dichlorodimethylsilane in Hydrogen: I, Silicon Formation from Chlorosilanes ☆ Domenick E. Cagliostro and Salvatore R. Riccitiello 39

Model for the Formation of Silicon Carbide from the Pyrolysis of Dichlorodimethylsilane in Hydrogen: II, Silicon Carbide Formation from Silicon and Methane ☆ Domenick E. Cagliostro and Salvatore R. Riccitiello 49

Densification of Alkoxide-Derived Fine Silica Powder Compact by Ultra-High-Pressure Cold Isostatic Pressing ☆ Hidehiro Kamiya, Hisao Suzuki, Daisuke Kato, and Genji Jimbo 54

Development of Functional Microstructure during Sintering of a ZnO Varistor Material ☆ Eva Olsson, Gordon Dunlop, and Ragnar Österlund 65

Effect of pH on the Hydration of Tricalcium Silicate ☆ A. R. Ramachandran and Michael W. Grutzeck 72

Nonaqueous Processing of Silicon for Reaction-Bonded Silicon Nitride ☆ Evelyn M. DeLiso and Alan Bleier 81

Kinetics of β-Si_3N_4 Grain Growth in Si_3N_4 Ceramics Sintered under High Nitrogen Pressure ☆ Kou-Rueh Lai and Tseng-Ying Tien 91

Preparation of Spherical, Submicrometer Oxide Particles by Hydrolysis of Emulsified Alkoxide Droplets ☆ Anne Bagley Hardy, Wendell E. Rhine, and H. Kent Bowen 97

Lubricated Rolling and Sliding Wear of a SiC-Whisker-Reinforced Si_3N_4 Composite against M2 Tool Steel ☆ Haiyan Liu, Morris E. Fine, Herbert S. Cheng and Alan L. Geiger 105

Transformation Textures in Zirconia ☆ Keith J. Bowman and I-W. Chen 113

Origin of the Grain Growth Anomaly in Donor-Doped Barium Titanate ☆ Miha Drofenik 123

A Methodology for Estimating the Mechanical Properties of Oxides at High Temperatures ☆ William B. Hillig 129

Effect of Loading Mode and Coating on Dynamic Fatigue of Optical Fiber in Two-Point Bending ☆ Vincenzo V. Rondinella and M. John Matthewson 139

Novel Niobium-Doped Titania Varistor with Added Barium and Bismuth ☆ Seng-Lu Yang and Jenn-Ming Wu 145

Dynamic Stress-Induced Transformation and Texture Formation in Uniaxial Compression of Zirconia Ceramics ☆ Ghatuparthi Subhash and Sia Nemat-Nasser 153

Evolution of Carbon during Burnout and Sintering of Tape-Cast Aluminum Nitride ☆ Hongwen Yan, W. Roger Cannon, and Daniel J. Shanefield 166

Low-Cost Melt-Formed Siliconized Silicon Carbide Radiant Tube Materials ☆ Taghi Darroudi, Richard E. Tressler, and Martin R. Kasprzyk 173

Effects of Mechanical Treatment on X-ray Diffraction Line Broadening in Pyrophyllite ☆ Pedro J. Sánchez-Soto, Manuel Macías, and José L. Pérez-Rodríguez 180

Creep Behavior of Potassium Chloride–Rubidium Chloride Solid Solution Alloys ☆ H. Duong, M. Beeman, and J. Wolfenstine 185

Preparation and Characterization of Platinum–Ceramic Composite Powders and Thin Films ☆ Kazushige Kohno, Yasuo Takeda, Nobuyuki Imanishi, Yoshinori Sakaki, Katsuyuki Sakamoto, and Osamu Yamamoto 192

Synchrotron Radiation Ti-*K* XANES Study of TiO_2–Y_2O_3-Stabilized Tetragonal Zirconia Polycrystals ☆ Ehrenfried Zschech, Paris N. Kountouros, Günter Petzow, Peter Behrens, Alex Lessmann, and Ronald Frahm 197

Improved Mechanical Material Property Definition for Predicting the Thermomechanical Behavior of Refractory Linings of Teeming Ladles ☆ Charles A. Schacht 202

Microstructure Development of Oxycarbide Composites during Active-Filler-Controlled Polymer Pyrolysis ☆ Tobias Erny, Michael Seibold, Otto Jarchow, and Peter Greil 207

Transformation, Microstructure Development, and Densification in α-Fe_2O_3-Seeded Boehmite-Derived Alumina ☆ James L. McArdle and Gary L. Messing 214

Communications

Measurement of Small Concentrations of Chromium and Iron in Rutile (TiO_2) Using Electron Spin Resonance ☆ Ronaldo S. de Biasi, Antonio A. R. Fernandes, and Maria L. N. Grillo 223

Thermochemical Evaluation of Combustion Synthesis of $MoSi_2$–SiC Composites ☆ Subrahmanyam Jandhyala 226

Effect of Compressive Stress on Fatigue of Alumina under Uniaxial Cyclic Loading ☆ Kitae T. Kim and Jeong Suh 229

Diffusion Bonds between a Stainless Steel and Zirconia ☆ Cai-Dong Qin and Brian Derby 232

Formation of Frozen α-AgI in Twin-Roller-Quenched AgI–Ag_2O–M_xO_y (M_xO_y = WO_3, V_2O_5) Glasses at Ambient Temperature ☆ Masahiro Tatsumisago, Akihiro Taniguchi, and Tsutomu Minami 235

High-Temperature Hardness of Chemically Vapor-Deposited Diamond ☆ Daniel R.Mumm, K. T. Faber, Michael D. Drory, and Clayton F. Gardinier 238

Rise Velocities of Large Bubbles in Viscous Newtonian Liquids ☆ Kang-Wen K. Li and Alfred Schneider 241

Synthesis and Irreversibility of Oxygen Weight Loss in 80 K $YBa_2Cu_4O_8$ Superconductor ☆ Duraiswamy Ravichandran, Varadarajan Sridharan, Swaminathan Sivasankaran, Dharani Kanta Biswas, Tharmalingam Nagarajan, and Uthamalingam Balachandran 245

Elevated-Temperature Behavior of High-Strength Silicon Carbide ☆ David Woodilla, Michael Buonomo, Isa Bar-On, ☆ R. Nathan Katz, and Thomas Whalen 249

Electrophoretic Deposition of Ferroelectric Barium Titanate Thick Films and Their Dielectric Properties ☆ Masaharu Nagai, Kimihiro Yamashita, Takao Umegaki, and Yasuhisa Takuma 253
Correction—A Prediction on the Strength of Glass Following the Formation of Subsurface Flaws by Scribing ☆ Weili Cheng and Iain Finnie 256

February [2]

Journal

Symposium for Surface Engineering of Structural Ceramics ☆ Robert R. Reeber and Sheldon M. Wiederhorn 260
Surface Engineering of Structural Ceramics ☆ Robert R. Reeber 261
Atomic-Level Characterization of Cubic Silicon Carbide Surfaces—A Review ☆ Ignatius S. T. Tsong 269
Metal Atom–Ceramic Binding Energies ☆ Richard P. Burns, Kenneth A. Gabriel, and Daniel E. Pierce 273
Effects of Sputtering and Plasma Etching on the Surface Reactivity of Graphite ☆ Marilyn J. Nowakowski, John M. Vohs, and Dawn A. Bonnell 279
Atomic Beam Modifications of Insulator Surfaces ☆ Ketti Eipers-Smith, Kelley Waters, and J. Albert Schultz 284
Positron Anninhilation Studies of the Internal Surfaces of Selected Zeolites and the Effect of Hydration ☆ Srinivas Surapanani, Michael E. Mullins, and James T. Waber 292
Laser Specular Reflectance and the Optical rms Roughness of Alumina ☆ Robert P. Kusy, James M. Stuart, John Q. Whitley, and Carl R. Saunders 299
Calculation, Measurement, and Control of Interface Strength in Composites ☆ Vijay Gupta, Jun Yuan, and Doris Martinez 305
Active Gaseous Corrosion of Porous Silicon Carbide ☆ Robert R. Sickafoose, Jr., and Dennis W. Readey 316
Effect of Grain Boundary Impurities on the Mechanical and Tribological Properties of Zirconia Surfaces ☆ Hong Liang, Traugott E. Fischer, Marco Nauer, and Claude Carry 325
Chemistry and Structure of Beta Silicon Carbide Implanted with High-Dose Aluminum ☆ Honghua Du, Zunde Yang, Matthew Libera, Dale C. Jacobson, Yu C. Wang, and Robert F. Davis 330
Coefficient of Friction Characterization of Surface-Modified Polycrystalline Alumina ☆ Robert P. Kusy, Olga Keith, John Q. Whitley, and Carl R. Saunders 336
Retention of Implanted Gases and Enhanced Thermal Expansion of Mica ☆ Gary Hishmeh, Louis Cartz, Frank G. Karioris, Claude Templier, Jacques Chaumont, and Catherine Clerc 343
Adherent Zirconia Films by Reactive Ion Implantation ☆ Stephen N. Bunker and Anthony J. Armini 347
Excimer Laser Surface Processing of Ceramics: Process and Properties ☆ Thomas R. Jervis, Michael Nastasi, K. M. Hubbard, and J.-P. Hirvonen 350
Tribology and Hardness of Excimer-Laser-Processed Titanium Layers on Cubic Zirconia ☆ Mark A. Zaleski, Thomas R. Jervis, and James W. Mayer 356
Low-Temperature Formation of Aluminum Orthophosphate ☆ James V. Bothe, Jr., and Paul W. Brown 362
Fracture Resistance Characteristics of a Metal-Toughened Ceramic ☆ Brian D. Flinn, Calvin S. Lo, Frank W. Zok, and Anthony G. Evans 369
Microstructural Evolution in Annealed and Crept Silicon Nitride ☆ Margaret M. Chadwick and David S. Wilkinson 376
Creep Behavior of a Sintered Silicon Nitride ☆ Margaret M. Chadwick, Robert S. Jupp, and Davis S. Wilkinson 385
Measurement of the Free Energy of Formation of Silicon Carbide Using Liquid Gold as a Silicon Potentiometer ☆ Sankar Sambasivan, Christopher Capobianco, and William T. Petuskey 397
Grain Boundary Oxidation in PTCR Barium Titanate Thermistors ☆ Aldo B. Alles and Vernon L. Burdick 401
Hydration of Calcium Aluminate Cements: A Solid-State ^{27}Al NMR Study ☆ Xiandong Cong and R. James Kirkpatrick 409
High-Temperature Dynamic Mechanical Thermal Analysis of a Lithium Zinc Silicate Glass-Ceramic ☆ Robert Hill and Paul Gilbert 417
Quantitative Comparison of TEM Techniques for Determining Amorphous Intergranular Film Thickness ☆ Michael K. Cinibulk, Hans-Joachim Kleebe, and Manfred Rühle 426
Effect of Precursor Particle Size on the Densification and Crystallization Behavior of Mullite ☆ William G. Fahrenholtz, Douglas M. Smith, and Joseph Cesarano III 433
Effect of Milling Treatment on the Particle Size in the Preparation of AlN Powder from Aluminum Polynuclear Complexes ☆ Noboru Hashimoto, Hiroyoshi Yoden, and Shigehito Deki 438
Liquid Precursor Route for Hetero-epitaxy of $Zr(Y)O_2$ Thin Films on (001) Cubic Zirconia ☆ Andreas Seifert, Fred F. Lange, and J. S. Speck 443
Glass-Forming Ability in Calcium Aluminate-Based Systems ☆ Eugenie V. Uhlmann, Michael C. Weinberg, Norbert J. Kreidl, and Aydin A. Goktas 449
Effect of Stoichiometry on the Dielectric Properties and Life Performance of $(Pb_{0.875}Ba_{0.125})[(Mg_{1/3}Nb_{2/3})_{0.5}$-$(Zn_{1/3}Nb_{2/3})_{0.3}Ti_{0.2}]O_3$ Relaxor Dielectric Ceramic: Part I, Dielectric Properties ☆ Hideyuki Kanai, Osamu Furukawa, Shin-ichi Nakamura, and Yohachi Yamashita 454
Effect of Stoichiometry on the Dielectric Properties and Life Performance of $(Pb_{0.875}Ba_{0.125})[(Mg_{1/3}Nb_{2/3})_{0.5}$-$(Zn_{1/3}Nb_{2/3})_{0.3}Ti_{0.2}]O_3$ Relaxor Dielectric Ceramic: Part II, Life Performance ☆ Hideyuki Kanai, Osamu Furukawa, Shinichi Nakamura, and Yohachi Yamashita 459
Computer Simulation of the Elastic and Fracture Behavior of Sodium Chloride Crystal ☆ Thawi Iwagoshi, Prabhat K. Gupta, and Suliman A. Dregia 465
Interaction of Silver/Palladium Electrodes with Lead- and Bismuth-Based Electroceramics ☆ Sea Fue Wang and Wayne Huebner 474
Predicting the Incidence of Voids in the Injection Molding of Thick Ceramic Sections ☆ Tao Zhang and Julian R. G. Evans 481
Grain Size–Microcracking Relation for $NaZr_2(PO_4)_3$ Family Ceramics ☆ Iwao Yamai and Toshitaka Ota 487
Modification of SiC Ceramics Using Chemical Vapor Deposition Surface Treatment ☆ Ting-ji Wang, Gui-xing Liu, Pu Ding, and Zong-zhe Jin 492
Processing and Characterization of SiC-Whisker-Reinforced Alumina-Matrix Composites ☆ Stanley M. Smith, Jitendra P. Singh, and Ronald O. Scattergood 497

Mechanical Behavior of Alumina–Silicon Carbide "Nanocomposites" ☆ Junhong Zhao, Laura C. Stearns, Martin P. Harmer, Helen M. Chan, Gary A. Miller, and Robert F. Cook 503
Sliding Wear of Silicon Carbide–Titanium Boride Ceramic-Matrix Composite ☆ Oyelayo O. Ajayi, Ali Erdemir, Richard H. Lee, and Fred A. Nichols 511
Batch Rotary Kiln Calcination of YBaCuO Precursor Powders ☆ Suhas D. Shelukar, H. G. Keshava Sundar, Raphael Semiat, James T. Richardson, and Dan Luss 518
Interaction of γ-rays with Some Alkali–Alkaline-Earth Borate Glasses Containing Chromium ☆ Hatem Abdel Rahman El-Batal and Fathy Mahmoud Ezz-El-Din 523

Communications

Conductivity of Tazheranite Ceramics Synthesized by Controlling Composition ☆ Hidehiko Kobayashi, Takashi Mitamura, Hideto Kuramochi, Toshiyuki Mori, and Hiroshi Yamamura 530
Phase Transformation Introduced by Mechanical and Chemical Surface Preparations of Tetragonal Zirconia Polycrystals ☆ Nibedita Mitra, Kalyani Vijayan, B. N. Pramila Bai, and S. K. Biswas 533
Testing of High-Strength Ceramics with the Split Hopkinson Pressure Bar ☆ James M. Staehler, William W. Predebon, Bruce J. Pletka, and James Lankford 536
Microstructure of Mica-Based Nanocomposite Glass-Ceramics ☆ Tomoko Uno, Toshihiro Kasuga, Shin Nakayama, and Akira J. Ikushima 539
Effects of SiF_4 and NH_3 Concentrations on the Low-Pressure CVD of Polycrystalline α-Si_3N_4 ☆ Woo Y. Lee and James R. Strife 542
Mixed Alkali Effect in Nonconventional Alkali Gallotitanate Glasses ☆ Fumiaki Miyaji, Shinya Hasegawa, Toshinobu Yoko, and Sumio Sakka 545
Liquid Permeability of Packed Particles: Why Perpetuate the Carmen–Kozeny Model? ☆ James S. Reed 547
Effects of Sintering Atmosphere on Densification Behavior and Piezoelectric Properties of $Pb(Ni_{1/3}Nb_{2/3})O_3$–$PbTiO_3$–$PbZrO_3$ Ceramics ☆ Jong H. Moon and Hyun M. Jang 549
Flexural Stress Rupture and Creep of Selected Commercial Silicon Nitrides ☆ William A. Sanders and Lance E. Groseclose 553
Diffusion of ^{57}Co in Surface Layers of Nickel Oxide and Alumina ☆ Edward P. Macey and Vladimir S. Stubican 557
Correction—Damage and Failure in Unidirectional Ceramic-Matrix Composites ☆ Douglas S. Beyerle, S. M. Spearing, Frank W. Zok, and Anthony G. Evans 560

March [3]

Journal

Ceramic Fuel Cells ☆ Nguyen Q. Minh 563
Relationship between Fracture Surface Roughness and Fracture Behavior of Cement Paste and Mortar ☆ David A. Lange, Hamlin M. Jennings, and Surendra P. Shah 589
Thermal Analysis of Reactions in Soda–Lime Silicate Glass Batches Containing Melting Accelerants: I, One- and Two-Component Systems ☆ Kug Sun Hong and Robert F. Speyer 598
Thermal Analysis of Reactions in Soda–Lime Silicate Glass Batches Containing Melting Accelerants: II, Multicomponent Systems ☆ Kug Sun Hong, Sang Won Lee, and Robert F. Speyer 605
Liquid-Phase-Assisted Sintering of Calcium-Doped Lanthanum Chromites ☆ Natsuko Sakai, Tatsuya Kawada, Harumi Yokokawa, Masayuki Dokiya, and Isao Kojima 609
Metal Organic Resin Derived Barium Titanate: I, Formation of Barium Titanium Oxycarbonate Intermediate ☆ Suresh Kumar, Gary L. Messing, and William B. White 617
Reaction Mechanisms in the Formation of Lead Zirconate Titanate Solid Solutions under Hydrothermal Conditions ☆ Humin Cheng, Jiming Ma, Bin Zhu, and Yuhong Cui 625
Neutron Diffraction Study on the Structure of Na-Si-O-N Oxynitride Glasses ☆ Jisun Jin, Toshinobu Yoko, Fumiaki Miyaji, Sumio Sakka, Toshiharu Fukunaga, and Masakatsu Misawa 630
High-Temperature Electrical Properties of the $Bi_{2.1}Sr_{1.9}(Ca_{1-x}Y_x)Cu_2O_y$ Solid Solution ☆ Byungsun Hong and Thomas O. Mason 635
High-Temperature X-ray Study of the Cubic–Tetragonal Diffusionless Phase Transition in the ZrO_2–$ErO_{1.5}$ System: I, Phase Change between Two Forms of a Tetragonal Phase, t'-ZrO_2 and t''-ZrO_2, in the Compositionally Homogeneous 14 mol% $ErO_{1.5}$–ZrO_2 ☆ Masatomo Yashima, Nobuo Ishizawa, and Masahiro Yoshimura 641
High-Temperature X-ray Study of the Cubic–Tetragonal Diffusionless Phase Transition in ZrO_2–$ErO_{1.5}$ System: II, Temperature Dependences of Oxygen Ion Displacement and Lattice Parameter of Compositionally Homogeneous 12 mol% $ErO_{1.5}$–ZrO_2 ☆ Masatomo Yashima, Nobuo Ishizawa, and Masahiro Yoshimura 649
Influence of ZrO_2 Grain Size and Content on the Transformation Response in the Al_2O_3–ZrO_2 (12 mol% CeO_2) System ☆ Paul F. Becher, Kathleen B. Alexander, Alan Bleier, Shirley B. Waters, and Wilbur H. Warwick 657
Model for the Effect of Powder Packing on the Driving Force for Liquid-Phase Sintering ☆ Thomas M. Shaw 664
Effects of Particle Size on the Fusion of Soda–Lime–Silicate Glass Containing NaCl ☆ Michael E. Savard and Robert F. Speyer 671
Superconducting Properties of Aerosol-Generated $YBa_2Cu_3O_{7-\delta}$ Powders ☆ Derong Zhou, Pratim Biswas, Jean Oostens, and Punit Boolchand 678
Role of Anion Vacancies in Nitrogen-Stabilized Zirconia ☆ Yi-Bing Cheng and Derek P. Thompson 683
Phase Equilibria in the System ZrO_2–$InO_{1.5}$ ☆ Kazunari Sasaki, Petr Bohac, and Ludwig J. Gauckler 689
Alkali-Resistant Magnesium Aluminosilicate Oxynitride Glasses ☆ Bärbel Steffestun and Günther H. Frischat 699
Sol–Gel Synthesis of Nanophase Yttria-Stabilized Tetragonal Zirconia and Densification Behavior below 1600 K ☆ David L. Bourell, Parimal, and Wolfgang Kaysser 705
Acoustic Characterization of Silica Glasses ☆ Cheng-Kuei Jen, Christian Neron, Alain Shang, Koich Abe, Lee Bonnell, and Junichi Kushibiki 712
Synthesis of a Polyborosilazane and Its Conversion into Inorganic Compounds ☆ Osamu Funayama, Tomohiro Kato, Yuji Tashiro, and Takeshi Isoda 717

Supersolidus Phase Investigation of the Bi-Sr-Ca-Cu Oxide System in Silver Tape ☆ Richard R. Schartman, Ridwan Sakidja, and Eric E. Hellstrom 724
Cracking due to Localized Hot Shock ☆ Viggo Tvergaard, Z. Cedric Xia, and John W. Hutchinson 729
Processing and Characterization of Porous TiO_2 Coatings ☆ Young-Joo Kim and Lorraine Falter Francis 737
Microstructure and Electrical Properties of $MgAl_2O_4$ Thin Films for Humidity Sensing ☆ Gualtiero Gusmano, Giampiero Montesperelli, Enrico Traversa, and Giulia Mattogno 743

Communications
Crystal Growth Inhibitor in Binary Borosilicate Glass Composite—Gallium Oxide ☆ Jau-Ho Jean and Tapan K. Gupta 751
Thermal Diffusivity/Conductivity of Compacts of C_{60} Buckminsterfullerene and a C_{60}–C_{70} Mixture ☆ James C. Withers, Raouf O. Loutfy, Kimberly Y. Donaldson, and D. P. H. Hasselman 754
Effect of Interlayer Thickness on Residual Thermal Stresses in a Ceramic-to-Metal Cylindrical Joint ☆ Osamu Kimura and Toshio Kawashima 757
Study of Phase Formation in Spray Pyrolysis of ZrO_2 and ZrO_2–Y_2O_3 Powders ☆ Dai Xiaming, Li Qingfeng, and Tang Yuying 760
In Situ Observation of Zirconia Particles at 1200°C by High-Resolution Electron Microscopy ☆ Michiko Kusunoki, Kyoko Yonemitsu, Yukichi Sasaki, and Yukio Kubo 763
Humidity Response Characteristics of Barium Titanate ☆ Tae Jin Hwang and Gyeong Man Choi 766
New Preparation Method for PZT Films Using Electrochemical Reduction ☆ Yasumichi Matsumoto, Hideki Adachi, and Jukichi Hombo 769
Core/Rim Structure of Liquid-Phase-Sintered Silicon Carbide ☆ Lorenz S. Sigl and Hans-Joachim Kleebe 773
Preparation of Spherical SnO_2 Powders by Ultrasonic Spray Pyrolysis ☆ Jong-Heun Lee and Soon-Ja Park 777
Preparation and ac Electrical Response Analysis for (Ba,Pb)TiO_3PTCR Ceramics ☆ Chun-Hung Lai and Tseung-Yuen Tseng 781
Simple Notch Preparation Technique for Fracture Toughness Measurements in Partially Stabilized Zirconia ☆ V. E. Annamalai, R. Ponraj, S. Ramakrishna Iyer, C. V. Gokularathnam, and R. Krishnamurthy 785
Apparent Enhanced Fatigue Resistance under Cyclic Tensile Loading for a HIPed Silicon Nitride ☆ Michael G. Jenkins, Mattison K. Ferber, and Chih-Kuang J. Lin 788
Electrical Conductivity of Zirconia Stabilized with Scandia and Yttria ☆ Hiroyuki Kaneko, Fuxue Jin, Hitoshi Taimatsu, and Hirotatsu Kusakabe 793
P–T Boundary of α-PbO_2 Type and Baddeleyite Type High-Pressure Phases of Titanium Dioxide ☆ Jie Tang and Shoichi Endo 796

April [4]
Journal
Creep Damage Development in Structural Ceramics ☆ Kwai S. Chan and Richard A. Page 803
Effect of Sintering Aids on Microstructures and PTCR Characteristics of $(Sr_{0.2}Ba_{0.8})TiO_3$ Ceramics ☆ Hsiu-Fung Cheng, Tsai-Fa Lin, Chen-Ti Hu, and I-Nan Lin 827
Precipitate Morphology in Ternary MgO,CaO-Partially-Stabilized Zirconias ☆ Robert M. Dickerson and Arthur H. Heuer 833
Fracture Toughness Anisotropy and Toughening Mechanisms of a Hot-pressed Alumina Reinforced with Silicon Carbide Whiskers ☆ Thomas Hansson, Richard Warren, and Jonas Wasén 841
Ag_2O-Doped $Bi_2Sr_2Ca_1Cu_2O_x$ Superconductors Prepared via Melt-Quenching ☆ Won-Hyuk Lee, Yoshihiro Abe, and Eikichi Inukai 849
A Transmission Electron Microscopy Diffraction and Simulation Method for Early-Stage Studies of the Evolution of Gel-Derived Zirconia Precursors ☆ Jianzhu Tong, Jian Min Zuo, and LeRoy Eyring 857
Nonlinear Optical Properties of TeO_2-Based Glasses: La_2O_3-TeO_2 Binary Glasses ☆ Sae-Hoon Kim, Toshinobu Yoko, and Sumio Sakka 865
Highly Reactive β-Dicalcium Silicate: V, Influence of Specific Surface Area on Hydration ☆ Kaori Sasaki, Hideki Ishida, Yoshihiko Okada, and Takeshi Mitsuda 870
Preventing Fatal Fractures in Carbon-Fiber–Glass-Fiber-Reinforced Plastic Composites by Monitoring Change in Electrical Resistance ☆ Norio Muto, Hiroaki Yanagida, Teruyuki Nakatsuji, Minoru Sugita, and Yasushi Ohtsuka 875
Elimination of Large Artificial Pores During the Hot Isostatic Pressing of Presintered Alumina ☆ Sang-Ho Lee, Jae-Kyun Yang, and Doh-Yeon Kim 880
Indentation Crack Initiation and Propagation in Tempered Glass ☆ Rajan Tandon and Robert F. Cook 885
Nonlinear Deformation of Ferroelectric Ceramics ☆ Hengchu Cao and Anthony G. Evans 890
Cohesive Zone Approach to Interpreting the Fiber Push-Out Test ☆ Anna Dollar and Paul S . Steif 897
Indentation Creep of Hydrated Soda–Lime Silicate Glass Determined by Nanoindentation ☆ Nico M. Keulen 904
Nature of Alumina in Phosphate Glass: I, Properties of Sodium Aluminophosphate Glass ☆ Richard K. Brow 913
Nature of Alumina in Phosphate Glass: II, Structure of Sodium Aluminophosphate Glass ☆ Richard K. Brow, R. James Kirkpatrick, and Gary L. Turner 919
Deposition and Characterization of Li_2O–SiO_2–P_2O_5 Thin Films ☆ John B. Bates, Nancy J. Dudney, Chris F. Luck, Brian C. Sales, Raymond A. Zuhr, and J. David Robertson 929
Notch Strength and Fracture Behavior of 2-D Carbon–Carbon Composites ☆ Gary E. Griesheim, Peter B. Pollock, and Shing-Chung Yen 944
Electrical Conduction in Aluminum Nitride ☆ Se-Aug Jang and Gyeong Man Choi 957
R-Curve Behavior and Flaw Insensitivity of Ce-TZP/Al_2O_3 Composite ☆ Nageswaran Ramachandran, Luen-Yuan Chao, and Dinesh K. Shetty 961
Mechanisms and Kinetics of Reaction-Bonded Aluminum Oxide Ceramics ☆ Suxing Wu, Dietmar Holz, and Nils Claussen 970
Chemical State of Vanadium in Tin-Based Yellow Pigment ☆ Kaichi Fujiyoshi, Hisanori Yokoyama, Feng Ren, and Shingo Ishida 981

Synthesis of Aluminum Nitride/Boron Nitride Composite Materials ☆ Tongsan D. Xiao, Kenneth E. Gonsalves, and Peter R. Strutt 987
Reaction of $CaTiO_3$ with $PbO–B_2O_3$ and $PbO–SiO_2$ Glasses ☆ Takashi Yamaguchi, Hiroko Ayaki, and Lika Asai 993
Effect of pH of the Solution on the Deposition of Zinc Oxide Films by Spray Pyrolysis ☆ Frédéric Caillaud, Agnès Smith, and Jean-François Baumard 998
Phase Composition of Hydrated DSP Cement Pastes ☆ Ping Lu, Guokuang Sun, and J. Francis Young 1003
Hot Deformation of $YBa_2Cu_3O_{7-\delta}$ and Composite $YBa_2Cu_3O_{7-\delta}/Ag$ ☆ Bryan C. Hendrix, Teruyoshi Abe, Janine C. Borofka, Pin-Chin Wang, and John K. Tien 1008
Hot Isostatic Pressing of $YBa_2Cu_3O_{7-\delta}$ and $YBa_2Cu_3O_{7-\delta}/Ag$ Composites ☆ Janine C. Borofka, Bryan C. Hendrix, Abbas I. Attarwala, and John K. Tien 1011
Threshold Stress Intensity for Crack Growth in Silicon Carbide Ceramics ☆ Bulent O. Yavuz and Richard E. Tressler 1017
On the Isothermal Martensitic Transformation in 3Y-TZP ☆ Gesa Behrens, Gerd W. Dransmann, and Arthur H. Heuer 1025
Preparation and Properties of Low-Calcium-Content Superconductive Thin Films in Bismuth Systems ☆ Keizou Tsukamoto, Hiromasa Shimojima, Mamoru Ishii, Naoya Enomoto, and Chitake Yamagishi 1031
Oxidation of Hafnium Carbide in the Temperature Range 1400° to 2060°C ☆ C. Brent Bargeron, Richard C. Benson, A. Norman Jette, and Terry E. Phillips 1040
Oxidation of Chemically Vapor-Deposited Silicon Nitride in Dry Oxygen at 1923 to 2003 K ☆ Takayuki Narushima, Ray Y. Lin, Yasutaka Iguchi, and Toshio Hirai 1047

Communications

Phase Diagram of Wollastonite–Zirconia ☆ Piedad N. De Aza, Carmen M. López, Francisco Guitián, and Salvador De Aza 1052
Zirconia/Alumina Functionally Gradiented Composites by Electrophoretic Deposition Techniques ☆ Partho Sarkar, Xuening Huang, and Patrick S. Nicholson 1055
Fabrication and Evaluation of $Al_2O_3–AgCl–AgI$ Composites by Use of Electrochemical Deposition ☆ Masayuki Nagai and Tadashi Nishino 1057
Preparation of Zirconia Coatings by Hydrolysis of Zirconium Alkoxide with Hydrogen Peroxide ☆ Chihiro Sakurai, Toshimi Fukui, and Masahiko Okuyama 1061
Determination of Critical Concentrations of Silica and/or Calcia for Abnormal Grain Growth in Alumina ☆ So Ik Bae and Sunggi Baik 1065
Correlation of Machining–Grain-Size Effects on Tensile Strength with Tensile Strength–Grain-Size Behavior ☆ Roy W. Rice 1068

May [5]

Journal

A. R. Cooper Symposium on Glass Science and Technology ☆ Prabhat K. Gupta and Arthur H. Heuer 1076
Alfred R. Cooper's Contributions to Glass Science and Technology ☆ Prabhat K. Gupta and Arthur H. Heuer 1077
Correlation between the Width of the Glass Transition Region and the Temperature Dependence of the Viscosity of High-Tg Glasses ☆ Cornelius T. Moynihan 1081
Rigidity, Connectivity, and Glass-Forming Ability ☆ Prabhat K. Gupta 1088
Kinetics of Indentation Cracking in Glass ☆ Robert F. Cook and Eric G. Liniger 1096
Strength, Degradation, and Coating of Silica Lightguides ☆ Charles R. Kurkjian, Peter G. Simpkins, and Daryl Inniss 1106
Thermal Stresses, Relaxation, and Hysteresis in Glass ☆ Simon M. Rekhson 1113
Numerical Models for Predicting Tracer Profiles in Silicon Double-Oxidation Experiments ☆ James D. Cawley 1124
Vibrational Spectroscopy of Aluminum Nitride ☆ Laurie E. McNeil, Marcos Grimsditch, and Roger H. French 1132
Local Structure of Defects on Hydrogen- and Vaccum-Reduced TiO_2 Surfaces ☆ Qian Zhong, John M. Vohs, and Dawn A. Bonnell 1137
Transmission High-Energy Electron Energy Loss Spectrometry (EELS) Analysis of Hole Formation and Charge Transfer in *p*-type Doped Cuprate Superconductors ☆ Hong Zhang and Vinayak P. Dravid 1143
Electrical Nonuniformity of Grain Boundaries within ZnO Varistors ☆ Hong-Tao Sun, Liang-Ying Zhang, and Xi Yao 1150
Preparation of Silicon Carbonitrides from an Organosilicon Polymer: I, Thermal Decomposition of the Cross-linked Polysilazane ☆ Djamila Bahloul, Mario Pereira, Paul Goursat, N. S. Choong Kwet Yive, and Robert J. P. Corriu 1156
Preparation of Silicon Carbonitrides from an Organosilicon Polymer: II, Thermal Behavior at High Temperatures under Argon ☆ Djamila Bahloul, Mario Pereira, and Paul Goursat 1163
Study of Porosity in Corroded Refractories ☆ Krzysztof J. Konsztowicz and Jacques Boutin 1169
Solid-State Sintering of $YBa_2Cu_3O_x$ in Different Oxygen Partial Pressures ☆ W. Howard Poisl and Asoke C. D. Chaklader 1177
Preparation of Barium Titanates from Oxalates ☆ Michael Stockenhuber, Helmut Mayer, and Johannes A. Lercher 1185
Effect of the Manganese Valence State on the Electrical Conductivity of Barium Titanate ☆ Shin-ichi Osawa, Akira Furuzawa, and Nobuyoshi Fujikawa 1191
Synthesis of Silicon Carbide–Silicon Nitride Composite Ultrafine Particles Using a Carbon Dioxide Laser ☆ Masaaki Suzuki, Yves Maniette, Yoshinori Nakata, and Takeshi Okutani 1195
Possible Electrical Double-Layer Contribution to the Equilibrium Thickness of Intergranular Glass Films in Polycrystalline Ceramics ☆ David R. Clarke, Thomas M. Shaw, Albert P. Philipse, and Roger G. Horn 1201
Effects of Pore Morphology and Grain Size on the Dielectric Properties and Tetragonal–Cubic Phase Transition of High-Purity Barium Titanate ☆ Tsang-Tse Fang, Huey-Lin Hsieh, and Fuh-Shan Shiau 1205
Mass Transport in the Presence of Internal Defect Reactions—Concepts of Conservative Ensembles: I, Chemical Diffusion in Pure Compounds ☆ Joachim Maier 1212
Mass Transport in the Presence of Internal Defect Reactions—Concepts of Conservative Ensembles: II, Evaluation of Electrochemical Transport Measurements ☆ Joachim Maier 1218
Mass Transport in the Presence of Internal Defect Reactions—Concepts of Conservative Ensembles: III, Trapping Effect of Dopants on Chemical Diffusion ☆ Joachim Maier 1223

Mass Transport in the Presence of Internal Defect Reactions—Concepts of Conservative Ensembles: IV, Tracer Diffusion and Intercorrelation with Chemical Diffusion and Ion Conductivity ☆ Joachim Maier 1228
High-Performance Multilayer Capacitor Dielectrics from Chemically Prepared Powders ☆ Salvatore A. Bruno, Donald K. Swanson, and Ian Burn 1233
Thermochemistry of the U–O and Zr–O Systems ☆ Wei-E Wang and Donald R. Olander 1242
Fiber Coating Concepts for Brittle-Matrix Composites ☆ Janet B. Davis, Jan P. A. Löfvander, Anthony G. Evans, Ewald Bischoff, and Mario L. Emiliani 1249
Toughening by Metallic Lamina in Nickel/Alumina Composites ☆ Zheng Chen and John J. Mecholsky, Jr. 1258
Reactions between Synthetic Mica and Simple Oxide Compounds with Application to Oxidation-Resistant Ceramic Composites ☆ Reid F. Cooper and Peter C. Hall 1265
Solid-State Diffusion Bonding of Carbon–Carbon Composites with Borides and Carbides ☆ Parviz Dadras and Gopal M. Mehrotra 1274
Tensile Creep and Creep-Recovery Behavior of a SiC-Fiber–Si_3N_4-Matrix Composite ☆ John W. Holmes, Yong H. Park, and J. Wayne Jones 1281
Mechanical Properties and Fracture Toughness of α-Al_2O_3-Platelet-Reinforced Y-PSZ Composites at Room and High Temperatures ☆ Xue-Ning Huang and Patrick S. Nicholson 1294
Compaction-Induced Anisotropy in Internal Structure of Ceramic Powder ☆ Susumu Shima and Mohamed A. E. Saleh 1303
Molecular Dynamics Study of Na-Si-O-N Oxynitride Glasses ☆ Hidero Unuma, Katsuyuki Kawamura, Naoya Sawaguchi, Hideki Maekawa, and Toshio Yokokawa 1308
Si_3N_4/SiC-Platelet Composite without Sintering Aids: A Candidate for Gas Turbine Engines ☆ Giuseppe Pezzotti 1313
Kinetics of Hexacelsian-to-Celsian Phase Transformation in $SrAl_2Si_2O_8$ ☆ Narottam P. Bansal and Charles H. Drummond, III 1321
Sol-Gel Processing of Neodymia–Silica Glass ☆ Edward J. A. Pope and John D. Mackenzie 1325
Slag–Portland Cement Based DSP Paste ☆ Ping Lu and J. Francis Young 1329
Plasma Spray Deposition of Fine SiC Powder ☆ Wen Xia Pan, Taira Okamoto, Yoshinari Miyamoto, Xiao Shan Ning, Hiroshi Matsumoto, and Toyonobu Yoshida 1335
Measurement of the Fracture Toughness of Ceramic Materials Using a Miniaturized Disk-Bend Test ☆ Jimin Zhang and Alan J. Ardell 1340
Origin of Orientation in Sol-Gel-Derived Lead Titanate Films ☆ Keiko Kushida, K. R. Udayakumar, S. B. Krupanidhi, and L. Eric Cross 1345
High-Temperature Failure Mechanisms of Hot-Pressed Si_3N_4 and Si_3N_4/Si_3N_4-Whisker-Reinforced Composites ☆ Cha-Yang Chu, Jitendra P. Singh, and Jules L. Routbort 1349

Communications

Low-Temperature Synthesis of Hexagonal Anorthite via Hydrothermal Processing ☆ Brian P. Borglum, John M. Bukowski, J. Francis Young, and Relva C. Buchanan 1354
Alumina Prepared from Freeze-Dried Aluminum Isopropoxide ☆ Hsiao-Lan Chang and Isabel K. Lloyd 1357
Low-Temperature Structural Phase Transition in ZrO_2–12 mol% CeO_2 Studied by Infrared Spectroscopy and X-ray Diffractometry ☆ Toshiya Hirata, Haiyan Zhu, Takao Furubayashi, and Isao Nakatani 1361
Hydrothermal Corrosion of Pure, Hot Isostatically Pressed Silicon Nitride ☆ Kohei Oda, Tetsuo Yoshio, Yoshinari Miyamoto, and Mitsue Koizumi 1365
Ion-Beam-Induced Densification of Zirconia Sol–Gel Thin Films ☆ Timothy E. Levine, Joseph L. Keddie, Peter Revesz, James W. Mayer, and Emmanuel P. Giannelis 1369
Powder Characteristics of $Pb(Mg_{1/3}Nb_{2/3})O_3$ Prepared by Molten Salt Synthesis ☆ Ki Hyun Yoon, Yong-Soo Cho, Dong-Heon Lee, and Dong-Heon Kang 1373
Local Measurements of Temperature Changes Associated with the Stress-Induced Tetragonal to Monoclinic Transformation in Zirconia ☆ Valter Sergo, Chiara Schmid, Patrizio Accardo, and Sergio Meriani 1377
Zirconium–Hafnium Interdiffusion in Polycrystalline Fluorite-Cubic CeO_2–ZrO_2–HfO_2 Solid Solution ☆ Yoshio Sakka, Yasumichi Oishi, Ken Ando, and Yoji Ikeda 1381
Nonisothermal Microwave Processing of Reaction-Bonded Silicon Nitride ☆ Jeffrey J. Thomas, Renee J. Christensen, D. Lynn Johnson, and Hamlin M. Jennings 1384
Fiber-Reinforced Diamond Matrix Composites ☆ Michael D. Drory, Robert J. McClelland, Frank W. Zok, and Fernando E. Heredia 1387
Diameter Dependence of the Refractive Index of Melt-Drawn Glass Fibers ☆ Joey M. Corpus and Prabhat K. Gupta 1390

June [6]

Journal

Crystallization of Copper Metaphosphate Glass ☆ Byeong-Soo Bae and Michael C. Weinberg 1395
Microstructure and Fracture Toughness of Hot-Pressed Zirconia-Toughened Sialon ☆ Markys G. Cain and Mike H. Lewis 1401
The U–Zr–C Ternary Phase Diagram above 2473 K ☆ Darryl P. Butt and Terry C. Wallace, Sr. 1409
Mechanical Properties of Unidirectionally Oriented SiC-Whisker-Reinforced Si_3N_4 Fabricated by Extrusion and Hot-Pressing ☆ Yasuhiro Goto and Akihiko Tsuge 1420
Plastic Deformation Mechanisms in SiC-Whisker-Reinforced Alumina ☆ Antonio R. De Arellano-López, Arturo Domínguez-Rodríguez, Kenneth C. Goretta, and Jules L. Routbort 1425
Stress Measurement in Single-Crystal and Polycrystalline Ceramics Using Their Optical Fluorescence ☆ Qing Ma and David R. Clarke 1433
Sol–Gel Fabrication of $Pb(Zr_{0.52}Ti_{0.48})O_3$ Thin Films Using Lead Acetylacetonate as the Lead Source ☆ Ulagaraj Selvaraj, Keith Brooks, Alamanda V. Prasadarao, Sridhar Komarneni, Rustum Roy, and L. Eric Cross 1441
Transient Plastic Phase Processing of Titanium–Boron–Carbon Composites ☆ Michel W. Barsoum and Boen Houng 1445
Silicon Carbide Platelet/Alumina Composites: II, Mechanical Properties ☆ Yeong-Shyung Chou and David J. Green 1452
Electrical Joining of Silicon Nitride Ceramics ☆ Koji Okuda, Hiroshi Takai, Tokumitsu Nishi, and Hiroaki Yanagida 1459

Characterization of Calcium Lanthanum Oxalate Powders Coprecipitated from Different Binary Solvent Mixtures ☆ Ann-Tinn Shen, Ying-Sheng Lee, and Nan-Kuen Sungyu 1466
Microcomposite and Nanocomposite Structures from Chemical Vapor Deposition in the Silicon–Titanium–Carbon System ☆ Muriel Touanen, Francis Teyssandier, Michel Ducarroir, Mohammed Maline, Roger Hillel, and Jean Luc Derep 1473
Homogeneous Fabrication and Densification of Cordierite–Zirconia Composites by a Mixed Colloidal Processing Route ☆ Byung C. Lim and Hyun M. Jang 1482
Mössbauer Spectroscopy Studies on Zn-Bearing Ferrite ☆ Tadao Kanzaki, Kenzo Kitayama, and Kazuo Shimokoshi 1491
Preparation of Stoichiometric Fine Lead Barium Titanate Powder ☆ Kunio Saegusa, Wendell E. Rhine, and H. Kent Bowen 1495
Effect of Composition and Size of Crystallite on Crystal Phase in Lead Barium Titanate ☆ Kunio Saegusa, Wendell E. Rhine, and H. Kent Bowen 1505
Computer Simulation of Impedance Spectroscopy in Two Dimensions: Application to Cement Paste ☆ R. Tate Coverdale, Edward J. Garboczi, Hamlin M. Jennings, Bruce J. Christensen, and Thomas O. Mason 1513
Influence of Tertiary Alkanolamines on Portland Cement Hydration ☆ Ellis Gartner and David Myers 1521
Properties of Zirconia–Ceria–Hafnia Alloys ☆ Eric F. Funkenbusch, Ross H. Plovnick, and Paul F. Becher 1531
Highly Oriented, Chemically Prepared $Pb(Zr,Ti)O_3$ Thin Films ☆ Bruce A. Tuttle, James A. Voigt, David C. Goodnow, Diana L. Lamppa, Thomas J. Headley, Michael O. Eatough, Gary Zender, Robert D. Nasby, and Steven M. Rodgers 1537
Effect of Humidity on Small-Crack Growth in Silica Optical Fibers ☆ Mikio Muraoka, Kiyoshi Ebata, and Hiroyuki Abé 1545
Microstructural Characterization of Structural Ceramics Using Image Processing and Analysis ☆ Jesse Hefter, Arlene Hecker, F. Michael Mahoney, and Jody E. Harris 1551
The System $MgO–P_2O_5–H_2O$ at 25°C ☆ Paul W. Brown, Julie Gulick, and John Dumm 1558
Various Scale Levels of the Gel-to-Glass Transformation ☆ Alexandre Chmel, Alexy Krivda, Ekatherina Mazurina, Victor Shashkin, and Valery Zhizhenkov 1563
New Experimental Setup for Wettability Characterization under Monitored Oxygen Activity: I, Role of Oxidation State and Defect Concentration on Oxide Wettability by Gold ☆ Dominique Chatain, Françoise Chabert, Véronique Ghetta, and Jacques Fouletier 1568
Reactive Cerium(IV) Oxide Powders by the Homogeneous Precipitation Method ☆ Pei-Lin Chen and I-Wei Chen 1577
Densification of Large Pores: II, Driving Potentials and Kinetics ☆ Elliott B. Slamovich and Frederick F. Lange 1584
Effect of Introduction of Chloride on the Upconversion Emission Intensity in Er- and Yb-Codoped ZBLAN Fluoride Glasses ☆ Satoru Inoue, Kohei Soga, and Akio Makishima 1591
Phase Relations in the System $Al_2O_3–Ce_2Si_2O_7$ in the Temperature Range 900° to 1925°C in Inert Atmosphere ☆ A. Cuneyt Tas and Mufit Akinc 1595

Communications

Effect of Load on the Hardness of Hot Isostatically Pressed Silicon Nitride ☆ Ridha Berriche and Richard T. Holt 1602
Semiconducting–Insulating Transition for Highly Donor-Doped Barium Titanate Ceramics ☆ Natsuko Kurata and Makoto Kuwabara 1605
Effects of Temperature and Oxygen Partial Pressure on Nonstoichiometry of $YBa_2Cu_3O_{6+\delta}$ ☆ Dong Nyung Lee and Byeong-Joo Lee 1609
Indentation-Cycling Tests on Soda–Lime Glass ☆ Ramesh Thiruvengadaswamy and Ronald O. Scattergood 1611
Dynamic Observation of Crack Propagation in Piezoelectric Multilayer Actuators ☆ Atsushi Furuta and Kenji Uchino 1615
Synthesis of $Ba_2RCu_4O_8$ (R = Y, Sm) Superconductors at Oxygen Pressure of 1 atm by Spray-Frozen/Freeze-Drying Method ☆ Motohide Matsuda, Yoshihisa Ogawa, Yasuhiko Aihara, Kimihiro Yamashita, and Takao Umegaki 1618
Oxidation of Silicon, Silicon Carbide, and Silicon Nitride in Gases Containing Oxygen and Chlorine ☆ PeiPei Hsu, Sikyin Ip, Chan Park, and Michael J. McNallan 1621
Mechanism of Grain Growth of β-SiAlON ☆ Mari-Ann Einarsrud and Mamoru Mitomo 1624
Topotactically Oriented α-Si_3N_4 Cores in Sintered β-Si_3N_4 ☆ Martin Krämer 1627
Processing of Molybdenum Disilicide Using a New Reactive Vapor Infiltration Technique ☆ Nag Patibandla and William B. Hillig 1630
Resistance of Tin Dioxide to Chemical Reaction with Vanadate–Sulfate Melts ☆ Robert L. Jones 1635
Cation-Exchange Characteristics of Sintered Hydroxyapatite in the Strongly Acidic Region ☆ Suguru Suzuki, Toshifumi Fuzita, Toru Maruyama, Minoru Takahashi, and Yasuo Hikichi 1638
Chemical Control of the Grain-Boundary Migration of $SrTiO_3$ in the $SrTiO_3–BaTiO_3–CaTiO_3$ System ☆ Kyung J. Yoon and Suk-Joong L. Kang 1641
Comment on "Characterization of Interfacial Properties in Fiber-Reinforced Cementitious Composites" ☆ Antoine E. Naaman and Jamil M. Alwan 1645
Reply to "Comment on 'Characterization of Interfacial Properties in Fiber-Reinforced Cementitious Composites' " ☆ Surendra P. Shah, Zongjin Li, and Barzin Mobasher 1647

July [7]

Journal

Evidence of Grain-Boundary-Sliding-Induced Cavitation in Ceramics under Compression ☆ Cheryl R. Blanchard and Kwai S. Chan 1651
Residual Stresses in Ceramic–Interlayer–Metal Joints ☆ Hsiang-Yung Yu, Santiago Carlos Sanday, and Bhakta Bhusan Rath 1661
Superplastic Gas-Pressure Deformation of YTZ Sheet ☆ Jerry Wittenauer, Tai Gang Nieh, and Jeffrey Wadsworth 1665
Comparison of Slow Crack Growth Behavior in Alumina and SiC-Whisker-Reinforced Alumina ☆ Kaiyang Zeng, Kristin Breder, and David Rowcliffe 1673
Influence of Amorphous Grain Boundary Phases on the Superplastic Behavior of 3-mol%-Yttria-Stabilized Tetragonal Zirconia Polycrystals (3Y-TZP) ☆ Maria Gust, Grace Goo, Jeff Wolfenstine, and Martha L. Mecartney 1681

Glass Transition and Infrared Spectra of Low-Alkali, Anhydrous Lithium Phosphate Glasses ☆ James J. Hudgens and Steve W. Martin 1691
Electromechanical Properties of Porous Piezoelectric Ceramics ☆ Martin L. Dunn and Minoru Taya 1697
α-Dicalcium Silicate Hydrate: Preparation, Decomposed Phase, and Its Hydration ☆ Hideki Ishida, Satoru Yamazaki, Kaori Sasaki, Yoshihiko Okada, and Takeshi Mitsuda 1707
Phenomenological Thermodynamic Treatment of Elastically Stressed Ionic Crystals ☆ William C. Johnson and Hermann Schmalzried 1713
Damage Development and Moduli Reductions in Nicalon–Calcium Aluminosilicate Composites under Static Fatigue and Cyclic Fatigue ☆ Prashant G. Karandikar and Tsu-Wei Chou 1720
Alpha-Decay-Induced Amorphization in Complex Silicate Structures ☆ William J. Weber 1729
Reaction Sintering of Zinc Ferrite during Constant Rates of Heating ☆ Mohamed N. Rahaman and Lutgard C. De Jonghe .. 1739
Zirconia–Ceria Solid Solution Synthesis and the Temperature–Time–Transformation Diagram for the 1:1 Composition ☆ Masatomo Yashima, Kenji Morimoto, Nobuo Ishizawa, and Masahiro Yoshimura 1745
Effect of CaO on the Thermal Conductivity of Aluminum Nitride ☆ Pedro Sainz de Baranda, Arne K. Knudsen, and Edwin Ruh 1751
Effect of Silica on the Thermal Conductivity of Aluminum Nitride ☆ Pedro Sainz de Baranda, Arne K. Knudsen, and Edwin Ruh 1761
Anisotropic Thermal Expansion of Tetragonal Zirconia Polycrystals ☆ Tzer-Shin Sheu 1772
Microstructure Evolution of SiC/Al_2O_3/Al-Alloy Composites Produced by Melt Oxidation ☆ Eitan Manor, Hu Ni, Carlos G. Levi, and Robert Mehrabian 1777
Preparation and Phase Separation Behavior of $(Co,Fe)_3O_4$ Films ☆ Shin-ichi Hirano, Toshinobu Yogo, Ko-ichi Kikuta, Emi Asai, Kiyoshi Sugiyama, and Hiroshi Yamamoto 1788
Toughness Anisotropy in Textured Ceramic Composites ☆ Farnjeng Lee, Michael S. Sandlin, and Keith J. Bowman 1793
Evaluating Porosity Parameters for Porosity–Property Relations ☆ Roy W. Rice 1801
Tape Casting Slip Preparation by *in Situ* Polymerization ☆ Gideon S. Grader and Limor Zuri 1809
Synthesis, Properties, and Ternary Phase Stability of M_6X Compounds in the Ti–Cu–O System ☆ Girish P. Kelkar and Altaf H. Carim 1815
Kinetics of the α-to-α'_H Polymorphic Phase Transition of Ca_2SiO_4 Solid Solutions ☆ Koichiro Fukuda, Iwao Maki, Kazuhiro Toyoda, and Suketoshi Ito 1821
Color and Vanadium Valency in V-Doped ZrO_2 ☆ Feng Ren, Shingo Ishida, and Nobuyuki Takeuchi 1825
Indentation Cyclic Fatigue of Single-Crystal Magnesium Oxide ☆ Marie-Odile Guillou, John Leslie Henshall, and Robert Maurice Hooper 1832
Crystallization Mechanism of MAS-osumilite with Composition $Mg_2Al_4Si_{11}O_{30}$ from Glass ☆ Wolfgang Winter, Axel Berger, Gerd Muller, and Wolfgang Pannhorst 1837
Adsorption as a Method of Doping 3-mol%-Yttria-Stabilized Zirconia Powder with Copper Oxide ☆ John R. Seidensticker, Merrilea J. Mayo, and K. Osseo-Asare 1844
Grain-Bridging Mechanisms in Monolithic Alumina and Spinel ☆ Jack C. Hay and Kenneth W. White 1849

Communications

Thermooptic Coefficients of Soda–Lime–Silica Glasses ☆ John M. Jewell 1855
Effect of Y_2O_3 Additions on the Densification of an Al_2O_3–TiC Composite ☆ Ki-Woong Chae, Doh-Yeon Kim, Byung-Chan Kim, and Kyung-Bae Kim 1857
Surface Roughness of Yttria-Containing Aluminosilicate Glass-Ceramics as Indicative of Their Machinability ☆ Kazuki Morita, Akira Umezawa, Shinji Yamato, and Akio Makishima 1861
Structure of Aluminum Nitride/Aluminum and Aluminum Oxide/Aluminum Composites Produced by the Directed Oxidation of Aluminum ☆ Else Breval, Michael K. Aghajanian, John P. Biel, and Stanislav Antolin 1865
Novel Technique for Zirconia-Coated Mullite ☆ Maria A. Sainz, Ramón Torrecillas, and José S. Moya 1869
Effect of Substitution of Ca on Thermal Expansion of Cordierite ($Mg_2Al_4Si_5O_{18}$) ☆ Sai Sundar V. S. S. Vepa and Arun M. Umarji 1873
Effect of Heating Rate on Pore Shrinkage in Yttria-doped Zirconia ☆ Do-Hyeong Kim and Chong Hee Kim 1877
Mullite with Lattice Constants $a > b$ ☆ Hartmut Schneider, Reinhard X. Fischer, and Dietmar Voll 1879
Preparation of Unsupported Metal Organic and Ceramic Thin Film Specimens for TEM Observation ☆ Suresh Kumar, Gary L. Messing, and Clive A. Randall 1882
Phase Separation and Crystallization of $BiSrCaCu_2Al_{0.5}O_x$ Glass ☆ Toshihiro Kasuga and Yoshihiro Abe 1885
Role of Interfacial Gaseous Heat Transfer in the Transverse Thermal Conductivity of a Uniaxial Carbon Fiber-Reinforced Aluminoborosilicate Glass ☆ Kimberly Y. Donaldson, Hemanshu D. Bhatt, D. P. H. Hasselman, Kenneth Chyung, and Mark P. Taylor 1888
Effect of Grain Growth of β-Silicon Nitride on Strength, Weibull Modulus, and Fracture Toughness ☆ Naoto Hirosaki, Yoshio Akimune, and Mamoru Mitomo 1892
Contributions of Transformation and Microcracking to the Plastic Deformation of Magnesia-Partially-Stabilized Zirconia ☆ Warren J. Batchelor, Trevor R. Finlayson, and Anita K. Gross 1895
Comment on "Role of Grain Size in the Strength and *R*-Curve Properties of Alumina" ☆ Roy W. Rice 1898
Reply to "Comment on 'Role of Grain Size in the Strength and *R*-Curve Properties of Alumina' " ☆ Brian R. Lawn, Linda M. Braun, Stephen J. Bennison, and Robert F. Cook 1900
Comment on "Analysis of the Sintering Pressure" ☆ Suk-Joong L. Kang 1902
Reply to "Comment on 'Analysis of the Sintering Pressure'" ☆ Rishi Raj 1903
Correction—Laser Specular Reflectance and the Optical rms Roughness of Alumina ☆ Robert P. Kusy, James M. Stuart, John Q. Whitley, and Carl R. Saunders 1904
Correction—Coefficient of Friction Characterization of Surface-Modified Polycrystalline Alumina ☆ Robert P. Kusy, Olga Keith, John Q. Whitley, and Carl R. Saunders 1904

August [8]

Journal

Effect of Mismatched Sintering Kinetics on Camber in a Low-Temperature Cofired Ceramic Package ☆ Guo-Quan Lu, Robert C. Sutterlin, and Tapan K. Gupta 1907
Calculation of Temperatures in Microwave-Heated Two-Dimensional Ceramic Bodies ☆ Deepak and James W. Evans 1915
Mathematical Model for Chemical Vapor Infiltration in a Microwave-Heated Preform ☆ Deepak and James W. Evans 1921
Kinetics of Silicon Nitride Chemical Vapor Deposition from Silicon Tetrafluoride and Ammonia ☆ Richard S. Larson 1930
Ceramic Wear Maps: Zirconia ☆ Soo W. Lee, Stephen M. Hsu, and Ming C. Shen 1937
Effect of Praseodymium on Superconductivity and Magnetism in $Y_{1-x}Pr_xBa_2Cu_4O_8$ Prepared by Nitrite Pyrolysis Method ☆ Teen-Hang Meen, Ying-Chung Chen, Ken-Whie Liaw, and Hung-Duen Yang 1948
Micromechanisms of Creep–Fatigue Crack Growth in a Silicide-Matrix Composite with SiC Particles ☆ U. Ramamurty, A. S. Kim, S. Suresh, and J. J. Petrovic 1953
Determination of Young's Modulus in Chemically Vapor-Deposited SiC Coatings ☆ Thomas R. Watkins, David J. Green, and Earle R. Ryba 1965
Statistical Analysis of the Intergranular Film Thickness in Silicon Nitride Ceramics ☆ Hans-Joachim Kleebe, Michael K. Cinibulk, Rowland M. Cannon, and Manfred Rühle 1969
Elastic Effect on Domain Morphology and Kinetics of Spinodal Decomposition in the Tetragonal System ☆ Shinji Nambu and Akinori Sato 1978
Silicon Carbide Platelet/Alumina Composites: III, Toughening Mechanisms ☆ Yeong-Shyung Chou and David J. Green 1985
Comparison of Bulk Properties of Mg-PSZ with Temperature–Time Contour Diagrams ☆ Charles S. Montross 1993
MAS NMR Studies of Partially Carbonated Portland Cement and Tricalcium Silicate Pastes ☆ Sabine Thomas, Karin Meise-Gresch, Werner Müller-Warmuth, and Ivan Odler 1998
Chemical Reactions in the Processing of $MoSi_2$ + Carbon Compacts ☆ Nathan S. Jacobson, Kang N. Lee, Stuart A. Maloy, and Arthur H. Heuer 2005
Alumina as a Devitrification Inhibitor during Sintering of Borosilicate Glass Powders ☆ Jau-Ho Jean and Tapan K. Gupta 2010
Phase Diagram of Na_2O–B_2O_3–SiO_2 System ☆ Kazem Ghanbari-Ahari and Andrew M. Cameron 2017
Microstructure and Properties of Cr_2O_3-Doped Ternary Lead Zirconate Titanate Ceramics ☆ Chich-Kwo Liang and Long Wu 2023
Phase Relationships in the ZrO_2–Sc_2O_3 and ZrO_2–In_2O_3 Systems ☆ Tzer-Shin Sheu, Jae Xu, and Tseng-Ying Tien 2027
Microchemical Analysis of the SCS-6 Silicon Carbide Fiber ☆ Xian-Jie Ning, Pirouz Pirouz, and Serene C. Farmer 2033
Temperature Dependence of Anelastic Deformation in Polycrystalline Silicon Nitride ☆ Kazunori Sato, Kohichi Tanaka, Yoshinori Nakano, and Tsutomu Mori 2042
Microstructural Evolution during the Sintering of TiC–Mo–Ni Cermets ☆ Dong-Il Chun, Doh-Yeon Kim, and Kwang-Yong Eun 2049
Positive Temperature Coefficient of Resistivity in $Ba_{1-x}Sr_xPb_{1+y}O_{3-\delta}$ Ceramics ☆ Hidetoshi Nagamoto, Hiroshi Kagotani, Tatsuya Okubo, and Toshiyuki Koya 2053
Optimization of the Thermodynamic Properties and Phase Diagrams of the Na_2O–SiO_2 and K_2O–SiO_2 Systems ☆ Ping Wu, Gunnar Eriksson, and Arthur D. Pelton 2059
Critical Evaluation and Optimization of the Thermodynamic Properties and Phase Diagrams of the CaO–FeO, CaO–MgO, CaO–MnO, FeO–MgO, FeO–MnO, and MgO–MnO Systems ☆ Ping Wu, Gunnar Eriksson, and Arthur D. Pelton 2065
Xenon Emission Accompanying Fracture of Xenon-Implanted Cubic Zirconia ☆ M. Grant Norton, Wenbiao Jiang, J. Thomas Dickinson, Leslie C. Jensen, Stephen C. Langford, Elizabeth L. Fleischer, and James W. Mayer 2076
Spherical Mullite Particles Prepared by Hydrolysis of Aerosols ☆ Manuel Ocaña, Jesús Sanz, Teresita Gonzalez-Carreño, and Carlos J. Serna 2081
Characterization of Pore Size Distribution by Infrared Scattering in Highly Dense ZnS ☆ William W. Chen and Bruce Dunn 2086
Sol–Gel Route to Synthesis of Microporous Ceramic Membranes: Thermal Stability of TiO_2–ZrO_2 Mixed Oxides ☆ Qunyin Xu and Marc A. Anderson 2093

Communications

Compositional Effects on the Liquid-Phase Sintering of Praseodymium Oxide-Based Zinc Oxide Varistors ☆ Aldo B. Alles, Robert Puskas, Gregory Callahan, and Vernon L. Burdick 2098
Crystallization and Properties of a Si-Y-Al-O-N Glass-Ceramic ☆ Jean-Louis Besson, Dominique Billieres, Tanguy Rouxel, Paul Goursat, Robert Flynn, and Stuart Hampshire 2103
Raman Spectroscopy of Tetragonal Zirconia Solid Solutions ☆ Dae-Joon Kim, Hyung-Jin Jung, and In-Sang Yang 2106
^1H Nuclear Magnetic Resonance Imaging of Water Diffusion in Hardened Cement Pastes ☆ George Papavassiliou, Fanny Milia, Michael Fardis, Ron Rumm, Edward Laganas, Orest Jarh, Anna Sepe, Robert Blinc, and Mik Milan Pintar 2109
Solid Solubility of Aluminum in O′-SiAlON ☆ Masayoshi Ohashi, Kiyoshi Hirao, Manuel E. Brito, Nagaoka Takaaki, Masaki Yasuoka, and Shuzo Kanzaki 2112
Sintering of Sol–Gel-Prepared Submicrometer Particles Studied by Transmission Electron Microscopy ☆ Xi Chu, Won-il Chung, and Lanny D. Schmidt 2115
Determination of the Oxygen Self-Diffusion Coefficients in Y_2O_3-Containing Tetragonal Zirconia Polycrystals by Raman Spectrometric Monitoring of the ^{16}O–^{18}O Exchange Reaction ☆ Byung-Kook Kim, Soon-Ja Park, and Hiro-o Hamaguchi 2119
A Controlled Flaw Technique for Lifetime Characterization ☆ Eric G. Liniger and Robert F. Cook 2123
Influence of Metal Ions on the Order–Disorder Transition Temperature of the Ba-M-O (M: La, Y, In, or Ga) System ☆ Takashi Mitamura, Hiroyuki Ogino, Hidehiko Kobayashi, Toshiyuki Mori, and Hiroshi Yamamura 2127
Phase Structure and Dielectric Properties of Bi_2O_3–ZnO–Nb_2O_5-Based Dielectric Ceramics ☆ Donhang Liu, Yi Liu, Shui-Q. Huang, and Xi Yao 2129

Assessment of Residual Strain in Zirconia-Toughened Alumina Using Neutron Diffraction ☆ Arie van Riessen and Brian H. O'Connor 2133
Dislocation Loops in α-Silicon Nitride ☆ Chong-Min Wang, Frank L. Riley, Francisco Castro, and Iñigo Iturriza 2136
Enhanced Formation of Calcia–Gallia Glass by Containerless Processing ☆ J. K. Richard Weber, Dennis R. Merkley, Collin D. Anderson, Paul C. Nordine, Chandra S. Ray, and Delbert E. Day 2139
Surface Strengthening of Alumina–Zirconia Composite by Addition of Molybdenum Dioxide ☆ Yu-Seon Shin and Suk-Joong L. Kang 2142

September [9]

Journal

Fundamental Research in Structural Ceramics for Service Near 2000°C ☆ Rishi Raj 2147
Stress–Strain Behavior of Nicalon-Fiber-Reinforced Calcium Aluminosilicate Composites under Tensile Fatigue Conditions ☆ Warren A. Thomas, Michael W. Kopp, and J. M. Sanchez 2175
Effect of Thermal History on the Thermal Diffusivity and Thermal Expansion of an Alumina–Aluminum Titanate Composite ☆ D. P. H. Hasselman, Kimberly Y. Donaldson, Edward M. Anderson, and Thomas A. Johnson 2180
Uniaxial Strength Behavior of Brittle Cellular Materials ☆ Rasto Brezny and David J. Green 2185
T-p_{O_2} Topologic Analysis of Phase Relations in the System CaO–CrO–Cr_2O_3–SiO_2 ☆ Johan Nell and Johan P. R. de Villiers 2193
Pore Narrowing and Formation of Ultrathin Yttria-Stabilized Zirconia Layers in Ceramic Membranes by Chemical Vapor Deposition/Electrochemical Vapor Deposition ☆ Guo-zhong Cao, Hendrik W. Brinkman, Joan Meijerink, Karel J. de Vries, and Anthonie J. Burggraaf 2201
Fibrous Monolithic Ceramics: I, Fabrication, Microstructure, and Indentation Behavior ☆ Suresh Baskaran, Stephen D. Nunn, Dragan Popovic, and John W. Halloran 2209
Fibrous Monolithic Ceramics: II, Flexural Strength and Fracture Behavior of the Silicon Carbide/Graphite System ☆ Suresh Baskaran and John W. Halloran 2217
High-Temperature Healing of Cracklike Flaws in Titanium Ion-Implanted Sapphire ☆ James D. Powers and Andreas M. Glaeser 2225
Model for Toughness Curves in Two-Phase Ceramics: I, Basic Fracture Mechanics ☆ Brian R. Lawn, Nitin P. Padture, Linda M. Braun, and Stephen J. Bennison 2235
Model for Toughness Curves in Two-Phase Ceramics: II, Microstructural Variables ☆ Nitin P. Padture, Julie L. Runyan, Stephen J. Bennison, Linda M. Braun, and Brian R. Lawn 2241
Influence of Atmosphere on the Final-Stage Sintering Kinetics of Ultra-High-Purity Alumina ☆ A. Mark Thompson and Martin P. Harmer 2248
Drying of Granular Ceramic Films: I, Effect of Processing Variables on Cracking Behavior ☆ R. C. Chiu, T. J. Garino, and M. J. Cima 2257
Combined Mode I and Mode II Fracture of Monolithic Ceramics ☆ Veena Tikare and Sung R. Choi 2265
Effect of Powder Surface Modifications on the Properties of Silicon Nitride Ceramics ☆ Samuel Natansohn, Arvid E. Pasto, and William J. Rourke 2273
Location of Aluminum in Substituted Calcium Silicate Hydrate (C-S-H) Gels as Determined by ^{29}Si and ^{27}Al NMR and EELS ☆ Ian G. Richardson, Adrian R. Brough, Rik Brydson, Geoffrey W. Groves, and Christopher M. Dobson 2285
Growth of Oxide Layers on Thin Aluminum Nitride Samples Measured by Electron Energy-Loss Spectroscopy ☆ Martin Sternitzke 2289
Mechanism of AlN Formation through the Carbothermal Reduction of Al_2O_3 in a Flowing N_2 Atmosphere ☆ Pierre Lefort and Michel Billy 2295
Push-Out Tests on a New Silicon Carbide/Reaction-Bonded Silicon Carbide Ceramic Matrix Composite ☆ William A. Curtin, Jeffrey I. Eldridge, and Gajawalli V. Srinivasan 2300
Control of the Interfacial Reactions in Nb-Toughened $MoSi_2$ ☆ Leon Shaw and Reza Abbaschian 2305
Flaw-Tolerance and Crack-Resistance Properties of Alumina–Aluminum Titanate Composites with Tailored Microstructures ☆ Nitin P. Padture, Stephen J. Bennison, and Helen M. Chan 2312
Synthesis and Processing Characteristics of $Ba_{0.65}Sr_{0.35}TiO_3$ Powders from Catecholate Precursors ☆ Naseef J. Ali and Steven J. Milne 2321
Influence of Loading Frequency on the Room-Temperature Fatigue of a Carbon-Fiber/SiC-Matrix Composite ☆ Stephen F. Shuler, John W. Holmes, Xin Wu, and David Roach 2327
Carbonitriding of Clay: Relation between the Weight Loss and Crystalline Phases during Reaction ☆ Alfredo D. Mazzoni, Esteban F. Aglietti, and Enrique Pereira 2337
Micro-Raman Analysis of Carbon Inclusions in Heavy-Metal Fluoride Glasses ☆ Jas S. Sanghera and Ishwar D. Aggarwal 2341
Synthesis of Nickel Sulfides by Mechanical Alloying ☆ Tomaz Kosmac, David Maurice, and Thomas H. Courtney 2345
Reactivity of Alumina toward Phosphoric Acid ☆ James V. Bothe, Jr., and Paul W. Brown 2353
X-ray Diffraction and Microstructural Investigation of the Al_2O_3–La_2O_3–TiO_2 System ☆ Srečo Škapin, Drago Kolar, and Danilo Suvorov 2359
Oxygen Tracer Diffusion in $La_{2-x}Sr_xCuO_{4-y}$ Single Crystals ☆ Elizabeth J. Opila, Harry L. Tuller, Bernhardt J. Wuensch, and Joachim Maier 2363

Communications

Incorporation of Monovalent Ions in ZnO and Their Influence on Varistor Degradation ☆ D. Jason Binks and Robin W. Grimes 2370
Sintering of Silicon Nitride with $YAlO_3$ Additive ☆ Anatolijs Kuzjukēvičs and Kozo Ishizaki 2373
Wear of Some Advanced Ceramics under a Sharp Indenter in Unidirectional Sliding ☆ J. Mukerji and P. K. Das 2376
High-Thermal-Expansion Polycrystalline Leucite Ceramic ☆ Toshitaka Ota, Minoru Takahashi, Iwao Yamai, and Hisao Suzuki 2379
High-Temperature Phase Transition of $Y_4Al_2O_9$ ☆ Hisanori Yamane, Mamoru Omori, Akira Okubo, and Toshio Hirai 2382
Influence of Potassium on Preparation and Performance of PTC Resistors ☆ In-Chyuan Ho and Huey-Lin Hsieh 2385

Low-Temperature Synthesis of ZrC Powder by Cyclic Reaction of Mg in ZrO_2–Mg–CH_4 ☆ Hidehiko Kobayashi, Kenichi Shimosaka, Miki Saitoh, and Takashi Mitamura 2389
Modeling of Grain-Size-Dependent Microfracture-Controlled Sliding Wear in Polycrystalline Alumina ☆ Haiyan Liu and Morris E. Fine 2393
High-Resolution Electron Microscopy of Silicon Carbide-Whisker-Reinforced Alumina Composite Interfaces in Specimens Subjected to Elevated Temperatures ☆ Andrew A. Wereszczak, Azar Parvizi-Majidi, Karren L. More, and Mattison K. Ferber 2397

October [10]

Journal

Effect of Aliovalent Dopants on the Kinetics of Phase Transformation and Ordering in RE_2O_3–Bi_2O_3 (RE = Yb, Er, Y, or Dy) Solid Solutions ☆ Kuan Zong Fung, Jong Chen, and Anil V. Virkar 2403
Effect of Coherency Strains on Phase Separation in the AlN–Al_2OC Pseudobinary System ☆ Jong Chen, Qiang Tian, and Anil V. Virkar 2419
Infrared Reflection of $Ba(Mg_{1/3}Ta_{2/3})O_3$ Ceramics ☆ Djuniadi A. Sagala and Shigeji Koyasu 2433
Space Charge Segregation at Grain Boundaries in Titanium Dioxide: I, Relationship between Lattice Defect Chemistry and Space Charge Potential ☆ Jeri Ann S. Ikeda and Yet-Ming Chiang 2437
Space Charge Segregation at Grain Boundaries in Titanium Dioxide: II, Model Experiments ☆ Jeri Ann S. Ikeda, Yet-Ming Chiang, Anthony J. Garratt-Reed, and John B. Vander Sande 2447
Suspension Dry Spinning and Rheological Behavior of Ceramic-Powder-Loaded Polymer Solutions ☆ S. D. Nunn, D. Popovic, S. Baskaran, J. W. Halloran, G. Subramanian, and S. G. Bike 2460
Energetics of Cobalt(II) Oxide with the Zinc-Blende Structure ☆ Joseph DiCarlo and Alexandra Navrotsky 2465
Critical Evaluation of the Compression Creep Test ☆ Klaus D. Debschütz, Bernhard Caspers, Gerold A. Schneider, and Gunter Petzow 2468
Crack Growth and Damage in Constrained Sintering Films ☆ Rajendra K. Bordia and Anand Jagota 2475
Linear and Nonlinear Optical Properties of TeO_2 Glass ☆ Sae-Hoon Kim, Toshinobu Yoko, and Sumio Sakka 2486
Analysis of Local Cation Arrangement in Mullite Using ^{29}Si Magic-Angle Spinning Nuclear Magnetic Resonance Spectra ☆ Takayuki Ban and Kiyoshi Okada 2491
Matrix Cracking in Ceramic-Matrix Composites ☆ Sawai Danchaivijit and Dinesh K. Shetty 2497
Slow Crack Growth in Sapphire Fibers at 800° to 1500°C ☆ Stephen A. Newcomb and Richard E. Tressler 2505
Cubic-to-Tetragonal Displacive Transformation in Gd_2O_3–Bi_2O_3 Ceramics ☆ Pomin Su, Anil V. Virkar, Camden R. Hubbard, O. Burl Cavin, and Wallace D. Porter 2513
High-Temperature Active Oxidation of Chemically Vapor-Deposited Silicon Carbide in CO–CO_2 Atmosphere ☆ Takayuki Narushima, Takashi Goto, Yoshio Yokoyama, Yasutaka Iguchi, and Toshio Hirai 2521
Effect of B_2O_3 and hBN Crystallinity on cBN Synthesis ☆ Jun-Youp Choi, Suk-Joong L. Kang, O. Fukunaga, Jong-Ku Park, and K. Y. Eun 2525
Relationship between Water Desorption and Low-Temperature Densification of Colloidal Anatase Thin Films ☆ Joseph L. Keddie, Paul V. Braun, and Emmanuel P. Giannelis 2529
Neutron Reflectometry Characterization of Interface Width between Sol-Gel Titanium Dioxide and Silicon Dioxide Thin Films ☆ Joseph L. Keddie, Laura J. Norton, Edward J. Kramer, and Emmanuel P. Giannelis 2534
Characterization of Interlaminar Shear Strength of Ceramic Matrix Composites ☆ Nancy J.-J. Fang and Tsu-Wei Chou 2539
SiC-Whisker-Reinforced Al_2O_3 Composites by Free Sintering of Coated Powders ☆ Ching-Li Hu and Mohamed N. Rahaman 2549
Atomic Force Microscopy and X-ray Photoelectron Spectroscopy Investigation of the Onset of Reactions on Alkali Silicate Glass Surfaces ☆ Gregory I. Rudd, Stephen H. Garofalini, and David A. Hensley 2555
Structural Evolution of Colloidal Silica Gels to Glass ☆ Jackie Y. Ying, Jay B. Benziger, and Alexandra Navrotsky 2561
Structural Evolution of Alkoxide Silica Gels to Glass: Effect of Catalyst pH ☆ Jackie Y. Ying and Jay B. Benziger 2571
Fracto-emission during Fracture of Engineering Ceramics ☆ Yuji Enomoto and M. Munawar Chaudhri 2583
A New Equation for Predicting the Dielectric Constant of a Mixture ☆ Kikuo Wakino, Tsutomo Okada, Norio Yoshida, and Kunisaburo Tomono 2588
Si-Al-O-N Fibers from Polymeric Precursor: Synthesis, Structural, and Mechanical Characterization ☆ Gian Domenico Sorarù, Massimo Mercadini, Roberto Dal Maschio, Francis Taulelle, and Florence Babonneau 2595
Cyclic Fatigue Crack Propagation Behavior of 9Ce-TZP Ceramics with Different Grain Size ☆ Tianshun Liu, Yiu-Wing Mai, and Georg Grathwohl 2601
Residual Stresses in Fiber-Reinforced Ceramics due to Thermal Expansion Mismatch ☆ Meinhard Kuntz, Bernhard Meier, and Georg Grathwohl 2607
A Chemical Kinetics Model for Glass Fracture ☆ Terry A. Michalske and Bruce C. Bunker 2613
Preparation of Barium Titanate Films at 55°C by an Electrochemical Method ☆ Priya Bendale, Sridhar Venigalla, John R. Ambrose, Ellis D. Verink, Jr., and James H. Adair 2619
Phase Transformations in Dicalcium Silicate: III, Effects of Barium on the Stability of Fine-Grained α_L' and β Phases ☆ Ian Nettleship, Kurt G. Slavick, Youn Joong Kim, and Waltraud M. Kriven 2628
Application of Sol-Gel Processing Techniques for the Manufacture of Fiber-Reinforced Ceramics ☆ R. S. Russell-Floyd, B. Harris, R. G. Cooke, J. Laurie, and F. W. Hammett 2635
New Yellow Ceramic Pigment Based on Codoping Pyrochlore-type $Y_2Ti_2O_7$ with V^{5+} and Ca^{2+} ☆ Shingo Ishida, Feng Ren, and Nobuyuki Takeuchi 2644
Synthesis of Lead Titanate: Thermodynamic Modeling and Experimental Verification ☆ Malgorzata M. Łencka and Richard E. Riman 2649

Communications

Vanadate Hot Corrosion Behavior of India, Yttria-Stabilized Zirconia ☆ Robert L. Jones, Richard F. Reidy, and Derek Mess 2660
Equilibrium Phase Diagrams in the Systems PbO–Ag and CuO–Ag ☆ Zhong B. Shao, Ke R. Liu, Ling Q. Liu, Hua K. Liu, and Shi-xue Dou 2663

Error Propagation Biases in the Calculation of Indentation Fracture Toughness for Ceramics ☆ J. Robert Kelly, Mark E. Cohen, and John A. Tesk 2665
Aerosol Generation of Lanthanum Aluminate ☆ Byron C. Lux, Ronald D. Clark, Abe Salazar, Larry K. Sveum, and Michael A. Krebs 2669
Crystal Structure of Metastable Tetragonal Zirconia by Neutron Powder Diffraction Study ☆ Naoki Igawa, Yoshinobu Ishii, Takanori Nagasaki, Yukio Morii, Satoru Funahashi, and Hideo Ohno 2673
Mechanical Properties of Hot Isostatically Pressed Zirconia-Toughened Alumina Ceramics Prepared from Coprecipitated Powders ☆ Yosuke Matsumoto, Ken Hirota, Osamu Yamaguchi, Suguru Inamura, Hiroki Miyamoto, Nobuaki Shiokawa, and Kazuhiro Tsuji 2677
Subcritical Crack Growth in Y-TZP and Al_2O_3-Toughened Y-TZP ☆ Mathias C. Knechtel, Daniel E. Garcia, Jürgen Rödel, and Nils Claussen 2681
Joining of Ceramics of Different Biofunction by Hot Isostatic Pressing ☆ Jianguo Li, Leif Hermansson, and Rune Söremark 2685
Hole Doping Mechanism in Bismuth Cuprates ☆ Shunji Nomura, Hisashi Yoshino, and Ken Ando 2687
Melt-Infiltration Processing and Fracture Toughness of Alumina–Glass Dental Composites ☆ William D. Wolf, Lorraine Falter Francis, Chun-Pin Lin, and William H. Douglas 2691
Tensile Creep and Creep-Strain Recovery Behavior of Silicon Carbide Fiber/Calcium Aluminosilicate Matrix Ceramic Composites ☆ Xin Wu and John W. Holmes 2695
Grain Alignment in Bulk $YBa_2Cu_3O_x$ Superconductors by Isothermal Peritectic Reaction Process ☆ Young A. Jee, Suk-Joong L. Kang, Jeong-Hun Suh, and Duk Yong Yoon 2701

November [11]

Journal

Ceramic Powder Synthesis by Spray Pyrolysis ☆ Gary L. Messing, Shi-Chang Zhang, and Gopal V. Jayanthi 2707
Preparation of Composite Particles by Pulsed Nd-YAG Laser Decomposition of $[(CH_3)_2N]_4Ti$ to TiN-Coat TiO_2, Al_2O_3, or Si_3N_4 Powders ☆ Chaitanya K. Narula, M. Matti Maricq, Brian G. Demczyk, Irving T. Salmeen, and Willes H. Weber 2727
Preparation of Coprecipitated Ferroelectric Ceramic Powders by Two-Stage Calcination ☆ Bruno Acácio Menegazzo and José Antonio Eiras 2734
Microstructure and Properties of Self-Reinforced Silicon Nitride ☆ Aleksander J. Pyzik and Donald R. Beaman 2737
Effective Elastic Moduli of Porous Ceramic Materials ☆ N. Ramakrishnan and V. S. Arunachalam 2745
Infrared Spectroscopy of Wide Composition Range $xNa_2S + (1 - x)B_2S_3$ Glasses ☆ Donald R. Bloyer, Jaephil Cho, and Steve W. Martin 2753
Evolution of Topology during Simulated Sintering of Powder Compacts ☆ Jingmin Zheng and Paul F. Johnson 2760
Drying of Granular Ceramic Films: II, Drying Stress and Saturation Uniformity ☆ Raymond C. Chiu and Michael J. Cima 2769
Grain Growth Studies of Silicon Nitride Dispersed in an Oxynitride Glass ☆ Martin Krämer, Michael J. Hoffmann, and Günter Petzow 2778
A New SiC-Whisker-Reinforced Lithium Aluminosilicate Composite ☆ Liang A. Xue and I-Wei Chen 2785
Improvement of Creep Resistance of Sintered Silicon Nitride by Hot Isostatic Exudation of Intergranular Glass ☆ Tanguy Rouxel, Jean-Louis Besson, and Paul Goursat 2790
Kinetics of Nonisothermal Crystallization of $Bi_2Sr_2CaCu_2O_x$ Glasses with Different Copper Valence States ☆ Takayuki Komatsu, Ryuji Sato, Yusuke Kuken, and Kazumasa Matusita 2795
Amorphous Intergranular Films in Silicon Nitride Ceramics Quenched from High Temperatures ☆ Michael K. Cinibulk, Hans-Joachim Kleebe, Gerold A. Schneider, and Manfred Rühle 2801
Thermodynamic Activities in B_2O_3–SiO_2 Melts at 1475 K ☆ Martin Boike, Klaus Hilpert, and Franz Müller 2809
Porosity Calculation of Binary Mixtures of Nonspherical Particles ☆ Ai-Bing Yu, Nicholas Standish, and Arnold McLean 2813
Thermomechanical Fatigue Behavior of a Silicon Carbide Fiber-Reinforced Calcium Aluminosilicate Composite ☆ Lawrence M. Butkus, John W. Holmes, and Theodore Nicholas 2817
Salt-Occluded Zeolites as an Immobilization Matrix for Chloride Waste Salt ☆ Michele A. Lewis, Donald F. Fischer, and Londa J. Smith 2826
Calculation of the Electronic Structure of *sp* Elements in β-Si_3N_4 with Correlation to Solubility and Solution Effects ☆ Isao Tanaka, Koichi Niihara, Saburo Nasu, and Hirohiko Adachi 2833
Preparation and Optical Properties of Transparent Glass-Ceramics Containing Cobalt(II) Ions ☆ Katsuhisa Tanaka, Takashi Mukai, Tsuguo Ishihara, Kazuyuki Hirao, Naohiro Soga, Seiji Sogo, Masaaki Ashida, and Riso Kato 2839
Chemical Vapor Infiltration of Boron Nitride Interphase in Ceramic Fiber Preforms: Discussion of Some Aspects of the Fundamentals of the Isothermal Chemical Vapor Infiltration Process ☆ Vincent Cholet and Lionel Vandenbulcke 2846
Influence of Iron Doping on the Microstructure of $YBa_2(Cu_{1-x}Fe_x)_3O_{7-\delta}$ Ceramics ☆ Pavel Diko, Paul.-H. Duvigneaud, Alain Lanckbeen, André Van Moer, Georges Naessens, and Robert Deltour 2859
Diffusionless Tetragonal–Cubic Transformation Temperature in Zirconia–Ceria Solid Solutions ☆ Masatomo Yashima, Kenji Morimoto, Nobuo Ishizawa, and Masahiro Yoshimura 2865
Influence of Oxygen Partial Pressure on the Quasi-Ternary System Cr-Mn-Ti Oxide ☆ Carmen García-Rosales, Horst A. Schulze, Aristides Naoumidis, and Hubertus Nickel 2869
Properties of Silicon Nitride–Molybdenum Disilicide Particulate Ceramic Composites ☆ Ming-yuan Kao 2879
Stabilized Zirconias Prepared by Mechanical Alloying ☆ Daniel Michel, Françoise Faudot, Eric Gaffet, and Léo Mazerolles 2884
Reaction Sintering of Cubic Boron Nitride Using Volatile Catalysts ☆ Hideaki Itoh, Hisaaki Takao, and Hiroyasu Iwahara 2889
Thermal Expansion Discontinuities of Mullite ☆ Hartmut Schneider, Katia Rodewald, and Emil Eberhard 2896

Structural Changes of Sol–Gel-Derived TiO_2–SiO_2 Coatings in an Environment of High Temperature and High Humidity ☆ Atsunori Matsuda, Toshihiro Kogure, Yoshihiro Matsuno, Shinya Katayama, Toshio Tsuno, Noboru Tohge, and Tsutomu Minami 2899
Effect of Nb_2O_5 Alloying on Thermal Expansion Anisotropy of 2 mol% Y_2O_3-Stabilized Tetragonal ZrO_2 ☆ Dae-Joon Kim, Paul F. Becher, and Camden R. Hubbard 2904

Communications

Preparation of Magnesium Nitride Powder by Low-Pressure Chemical Vapor Deposition ☆ Tsuyoshi Murata, Kiyoshi Itatani, F. Scott Howell, Akira Kishioka, and Makio Kinoshita 2909
Optically Translucent Mullite Ceramics ☆ Hartmut Schneider, Martin Schmücker, Ko Ikeda, and Wolfgang A. Kaysser ... 2912
Scanning Acoustic Microscopy Observations of High-Temperature Crack-Bridging Mechanisms in Alumina ☆ James Marrow, Vincenza Luprano, and Steve Roberts 2915
Role of Oxidation in the Time-Dependent Failure Behavior of Hot Isostatically Pressed Silicon Nitride at 1370°C ☆ Andrew A. Wereszczak, Kristin Breder, and Mattison K. Ferber 2919
Fabrication of Transparent Tellurite Glasses Containing Potassium Niobate Crystals by an Incorporation Method ☆ Takayuki Komatsu, Kazuhide Shioya, and Kazumasa Matusita 2923
Ambient and High-Temperature Stable Fracture Tests in Ceramics: Applications to Yttria-Partially-Stabilized Zirconia ☆ Jose Ygnacio Pastor, Jaime Planas, and Manuel Elices 2927
Electrically Conducting Pb_xO_x–SiO_2 Glass Films Deposited by Reactive Radio-Frequency Magnetron Sputtering ☆ Gianantonio Della Mea, Valentino Rigato, Roberto Dal Maschio, Corrado Sighel, and Paolo Colombo 2930
Statistics of Brittle Failure in Multiaxial Stress States ☆ Jens Henrik Andreasen 2933
Combined Buckling and Cracking of Films ☆ M. D. Thouless 2936
Synthesis of $0.4Pb(Mg_{1/3}Nb_{2/3})O_3$–$0.3Pb(Mg_{1/2}W_{1/2})O_3$–$0.3PbTiO_3$ Ceramics by Metal Alkoxide Method, and Its Dielectric Properties ☆ Atsushi Aruga, Yoshikazu Nakamura, Tsuneharu Aoi, Yoshihisa Watanabe, Shigekazu Hirayama, and Shirou Fujimoto 2939
Microtextures Formed by the Remelting Reaction in Belite Crystals ☆ Koichiro Fukuda, Iwao Maki, Susumu Ikeda, and Suketoshi Ito 2942

December [12]

Journal

Coalescence of Two Viscous Cylinders by Capillarity: Part I, Theory ☆ Robert W. Hopper 2947
Coalescence of Two Viscous Cylinders by Capillarity: Part II, Shape Evolution ☆ Robert W. Hopper 2953
Precursor Morphology Effects in Combustion-Synthesized and Dynamically Consolidated Titanium Carbide and Titanium Boride ☆ Laszlo J. Kecskes, Andrus Niiler, and Thomas Kottke 2961
Kinetics of Tricalcium Aluminate and Tetracalcium Aluminoferrite Hydration in the Presence of Calcium Sulfate ☆ Paul Wencil Brown 2971
Rheological Behavior of Injection-Moldable Silicon Powder–Silicon Carbide Whisker Formulations ☆ Inlin Tsao, Stephen C. Danforth, and Arthur B. Metzner 2977
Effect of Substrate Texture on Orientations of rf-Sputtered $Ba_2Si_2TiO_8$ Thin Films ☆ Yi Li, William V. Youdelis, Benjamin S. Chao, and Hisao Yamauchi 2985
Microstructure of Hardened Cement Paste—A New Interpretation ☆ Sidney Diamond and David Bonen 2993
Wettability and Interfacial Reaction between Molten Iron and Zirconia Substrates ☆ Kunihiko Nakashima, Kenji Takihira, Takashi Miyazaki, and Katsumi Mori 3000
Effect of Hot Extrusion, Other Constituents, and Temperature on the Strength and Fracture of Polycrystalline MgO ☆ Roy W. Rice 3009
Structure and Properties at the Ferroelectric/Electrode Interface between Lead Zirconate Titanate and Copper ☆ Heng C. Cao, Marc De Graef, and Anthony G. Evans 3019
29-Si and 27-Al Magic-Angle Spinning Nuclear Magnetic Resonance Study of the Thermal Transformations of Pyrophyllite ☆ Pedro J. Sánchez-Soto, Isabel Sobrados, Jesús Sanz, and José L. Pérez-Rodríguez 3024
Shape Evolution of a Coherent Tetragonal Precipitate in Partially Stabilized Cubic ZrO_2: A Computer Simulation ☆ Yunzhi Wang, Hongying Wang, Long-Qing Chen, and A. G. Khachaturyan 3029
Microstructure and Microchemistry of Polymer-Derived Crystalline SiC Fibers ☆ Youren Xu, Avigdor Zangvil, Jonathan Lipowitz, James A. Rabe, and Gregg A. Zank 3034
Evaluation of Interfacial Properties of Fiber-Reinforced Ceramic Composites Using a Mechanical Properties Microprobe ☆ Chun-Hway Hsueh 3041
Effects of Microstructural Instability on the Creep Behavior of Si-C-O (Nicalon) Fibers in Argon ☆ Nanying Jia, Raphael Bodet, and Richard E. Tressler 3051
Tin(IV) Oxide Coating of Aluminum Borate Whiskers and Alumina Particles by Chemical Vapor Deposition ☆ Keiichi Tsugeki, Tomohisa Yoshikawa, Hideaki Maeda, Katsuki Kusakabe, and Shigeharu Morooka 3061
Fracture Behavior of Chemically-Vapor-Deposited SiC-Coated Graphite: I, Experimental Results ☆ Thomas R. Watkins and David J. Green 3066
Structural Relaxations in Alkali Silicate Systems by Brillouin Light Scattering ☆ John E. Masnik, John Kieffer, and Jay D. Bass 3073
Correlation between Radiative Transition Probabilities of Nd^{3+} and Composition in Silicate, Borate, and Phosphate Glasses ☆ Yoshikazu Nageno, Hiromichi Takebe, and Kenji Morinaga 3081
Early-Stage Microstructure Development in Bi-Sr-Ca-Cu-O Glasses ☆ Seong-Jin Kim, Dunbar P. Birnie III, and Donald R. Uhlmann 3087
Stress-Enhanced Oxidation of Silicon Nitride Ceramics ☆ Yury G. Gogotsi and Georg Grathwohl 3093
Tensile Creep and Creep Rupture Behavior of Monolithic and SiC-Whisker-Reinforced Silicon Nitride Ceramics ☆ Tatsuki Ohji and Yukihiko Yamauchi 3105
R-Curve and Compliance Change upon Renotching ☆ Ekkehard H. Lutz and Mototsugu Sakai 3113
Viscosities and Sintering Rates of a Two-Dimensional Granular Composite ☆ Anand Jagota and George W. Scherer 3123

Adsorption of Sulfonic Acid Doped Poly(vinyl chloride) on Barium Ferrite Particles ☆ Hiroshi Sakai, Michael J. Cima, and Wendell E. Rhine 3136

Communications

Microstructure of Epitaxial Ferroelectric $YBa_2Cu_3O_{7-x}/Pb_{0.9}La_{0.1}(Zr_{0.2}Ti_{0.8})_{0.975}O_3/YBa_2Cu_3O_{7-x}$ Heterostructures on $LaAlO_3$ ☆ Subodh G. Ghonge, Edward Goo, R. Ramesh, T. Sands, and V. G. Keramidas 3141

Transformation Driving Force for Indentation Cracking in Zirconia Ceramics ☆ Kaiming Liang and Koufen Gu 3144

Sol-Gel Synthesis of High-Quality Heavy-Metal Fluoride Glasses ☆ Matthew Dejneka, Richard E. Riman, and Elias Snitzer 3147

Transverse Strength of SCS-6 Silicon Carbide Fibers ☆ Jeffrey I. Eldridge, Jonathan P. Wiening, Terry S. Davison, and Marek-Jerzy Pindera 3151

Effect of Rare-Earth Additives on Electromechanical Properties of Modified Lead Titanate Ceramics ☆ Thitima Suwannasiri and Ahmad Safari 3155

Correlations between Strength and Acoustic Properties in Yttria-Stabilized Zirconia Polycrystals ☆ Manabu Oishi, Yukihisa Matsuda, Kenichi Noguchi, and Takaki Masaki 3159

In Situ Study on the Generation of Radiation Damage in Cubic-Zirconia in the High-Voltage Electron Microscope ☆ Bernd Baufeld, Dietmar Baither, Ulrich Messerschmidt, Martin Bartsch, and Ingolf Merkel 3163

Hot-Grip Tensile Method for Alumina-Fiber Testing ☆ Ozer Unal and K. Peter D. Lagerlof 3167

A New Technique for Monitoring Aging in Yttria–Tetragonal Zirconia Polycrystals ☆ Simon Lawson and Paul A. Smith 3170

Chemically Corroded Pristine Silica Fibers: Blunt or Sharp Flaws? ☆ Daryl Inniss, Qian Zhong, and Charles R. Kurkjian .. 3173

Comment on "Kinetics of β-Si_3N_4 Grain Growth in Si_3N_4 Ceramics Sintered under High Nitrogen Pressure" ☆ Sang-Moo Han and Suk-Joong L. Kang 3178

Correction—Alumina as a Devitrification Inhibitor during Sintering of Borosilicate Glass Powders ☆ Jau-Ho Jean and Tapan K. Gupta 3180

Instructions for the Preparation of Papers 3181

Author Index 3185

Subject Index 3195

Statement of Ownership

Ownership, Management, and Circulation Statement per 39 U.S. Code 3685 for *Journal of the American Ceramic Society* as filed September 7, 1993, (amended November 17, 1993) with the U.S. Postal Service.

The *Journal of the American Ceramic Society* is published monthly by the American Ceramic Society, 735 Ceramic Place, Westerville, OH 43081-8720. The publisher is W. Paul Holbrook and the editor is John B. Wachtman.

	Avg. each issue during previous 12 months	Actual no. of single issue nearest filing date
A. Total number of copies printed	5138	4930
B. Paid circulation		
1. Sales through dealers, carriers, etc.	592	580
2. Mail subscriptions	3568	3857
C. Total paid circulation	4160	4437
D. Free distribution by mail, carrier, or other means-- samples, complimentary, and other free copies	60	82
E. Total distribution	4220	4519
F. Copies not distributed		
1. Office use, left over, unaccounted, spoiled after printing	918	411
2. Returned from news agents	none	none
G. Total	5138	4930